GEOGRAPHIC NEWS BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated under the Federal law as a non-commercial institution for the increase of geographic knowledge and its popular diffusion.)

General Headquarters, Washington, D. C.

Contents for Week of March 9, 1931. Vol. X. No. 3.

1. Niagara: Hour Glass of Geology.
2. Trans-Asia Expedition Member Visits the United States.
3. Basques Cling to Language and Customs.
4. Argentina: World's Leading Cow Country.
5. Mesohippus, Three-Toed Horse of Wyoming.

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A LESSON IN BRUSHMANSHIP

In writing Chinese, a fine-pointed brush is used instead of a pen. The Chinese have no alphabet so a character for each word has to be memorized. Children are taught only a thousand of the more common characters. School books are written in Chinese, using these difficult characters for type (See Bulletin No. 2).

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic News Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers for one year upon receipt of 25 cents (in stamps or money order). Entered as second-class matter, January 27, 1922, at the Post Office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized February 9, 1922.

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Niagara: Hour Glass of Geology

A CRASH of rock which changed the contour of Niagara Falls is a major news event in the eyes of mankind, but is only an incident in the age-old geological history of the Falls.

For 30,000 years the Falls has been the geologic hour glass for much of North America. By reading the record of the rocks that go through the neck of the gorge, as grains of sand slip through the hour glass, scientists stopwatch the glacier sheets, which were the first plows to furrow the fertile midwest.

Dates Accurately Fixed

In the sermons of the cataract's stones lie the history of Lake Algonquin, the predecessor of Lakes Superior, Michigan, and Huron, and of Lake Iroquois, the sprawling ancestor of Lake Ontario. Their dates are fixed almost as accurately as history books report William the Conqueror's arrival in England in 1066.

Niagara is the North American champion in one of the greatest battles Nature ever umpired. Literally scores of challengers sought her crown. More than once Niagara fell almost lifeless on her water-worn rocks. But finally the seekers for her crown gave up; the last not many more centuries ago than the days of Tutankhamen.

Niagara is said to take its name from the Indian title nee-agg-arah, which appropriately means "across the neck." The Niagara River cuts across the neck of land separating Lake Erie and Lake Ontario. Just east of Buffalo the river collects the entire natural discharge of the four upper Great Lakes, rushes it through a narrowing river for 16 miles, pushes it over a sheer drop of 212 feet, churns it 7 miles through a canyon, and then carries it gently by 7 miles of lowland to Lake Ontario.

The Birth of Niagara

Our Niagara was born when the glaciers melted back, exposing the ridge the water now tumbles down. Like the glaciers of the Rockies, these enormous sheets of ice moving down from Labrador poured out streams of water. These streams collected ages ago at the foot of the huge ice tongues in depressions extending into Ohio, Indiana and Illinois. Accumulated water sometimes rose hundreds of feet higher than the present level of the Great Lakes and poured out into the Mississippi over the present site of Chicago and through outlets in Ohio and Indiana.

Finally, as the ice melted northward, prehistoric Lake Tonawanda formed on the edge of the plateau over which Niagara pours. There were then five outlets from this lake—at Holley, Medina, Gasport, Lockport and Lewiston. The spillway at Lewiston, Niagara, won out. Lockport gorge now contains a flight of steps for the New York barge canal.

Early Niagaras Numerous

About the time Niagara was beginning to triumph, the melting glacier moved back to Lake Simcoe, Ontario. The fickle waters of the upper lakes lost little time in finding the Trent Valley, a ragged series of lakes and rivers leading into Lake Ontario. Trent Valley gorges tell of many early Niagaras. At this time only 15 per cent of the present flow went over Niagara, forming the narrow lower

© De Cou from Galloway

ARGENTINA'S MAJESTIC CAPITOL BUILDING RESEMBLES OURS IN WASHINGTON

Here the Argentine Senate and Chamber of Deputies have met since 1906. Buenos Aires is like Paris in the beauty of its public buildings, the palatial homes of rich landowners, and its broad avenues, parks and many statues (See Bulletin No. 4).

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Trans-Asia Expedition Member Visits the United States

ON HIS way to join the "China unit" of the Trans-Asiatic Expedition, the Rev. Father Teilhard de Chardin, paleontologist, visited Dr. Gilbert Grosvenor, president of the National Geographic Society, which is cooperating with the French explorers.

Father De Chardin sailed from San Francisco for Peiping (Peking), where seven ~~caterpillar~~ tractor cars will leave about March 10 to make their way westward to Kashgar, at the foot of the Pamir, in Chinese Turkestan. There the "China unit" will meet the main body of the expedition, led by Georges-Marie Haardt, which will have progressed from Beirut, Syria, through Iraq, Persia, Afghanistan and across regions of the great Pamir area not explored since Marco Polo's time.

Confers with Scientists Here

Father De Chardin proceeded to Peiping by way of the United States to visit the headquarters of the National Geographic Society and to confer with scientists in Washington and New York, while the leader of the Chinese unit, Lieutenant Commander Point, a small detachment of the expedition, and mechanics, are going direct with the cars to Peiping.

Before the "China unit" left Paris the cars were inspected at the Citroën factory, where they were especially constructed for the epochal project, by President Doumergue, of France, by Andre Tardieu, Perre Laval, other members of the cabinet, Senate, and by many distinguished statesmen and scientists. Then the public was admitted, and during the Sunday they were on exhibition thousands of Parisians deserted the boulevards and cafés to form a queue that passed before the strange looking vehicles from early morning until late at night.

Special Types of Cars

The cars sent to China are the "all-terrain" type, as distinguished from the "mountain type" of cars that will attack the high passes of the great central Asiatic range of mountains known as the Pamir. A third type of automotive transportation the expedition will utilize are the trucks with special wheels, constructed to move heavy loads of provisions over marshy ground.

The cars are substantially of the type employed by M. Haardt in his automobile crossing, for the first time, of the Sahara Desert, and later in his amazing trans-African journey, when he took a caravan of ~~caterpillar~~ tractor cars from Algeria to Madagascar and the Cape.

The Trans-Asiatic Expedition plans one of the most complete geographical explorations of our times, and it will employ all the aids of modern science and a diverse personnel of specialists in its study of the little known tribes, geology, zoology, plant life, and other aspects of secluded inner Asia.

Formidable Obstacles Loom

In threading its way over inaccessible trails from Beirut to Peiping, it will traverse some 12,000 miles, spanning the width of the giant continent, and its vehicles must cross mountains, marshes, rivers, swamps, lofty plateaus and vast deserts.

The major objective of the "China unit," traveling from Peiping to Kash-

gorge. Nature came to the rescue, tipping a great block of land, ever so slightly, but enough to shut off the Trent faucet and make even more water go over Niagara than the spectator sees to-day.

Niagara was defeated when the outlet shifted to North Bay, Ontario, sending the waters down the Ottawa over the portage which Champlain was to take to discover Lake Huron. The upper narrow gorge was then carved, but again the huge rock saucer, which has the Great Lakes puddles in the bottom, tipped, leaving Niagara triumphant.

Niagara started to spill over the bank at Lewiston about 30,000 years ago. In 300 centuries it has shoveled its way 7 miles. At its present rate of excavation, more than 4 feet annually, Niagara will dig back the remaining 16 miles to Lake Erie about the year A.D. 21,924. Before this time, however, man may take a hand, since the peril to the famous Horseshoe Falls, by the recent erosion, has brought forth the suggestion of reinforcing the lip of the Falls.

See, also, "The World's Great Waterfalls," *National Geographic Magazine*, July, 1926.

Bulletin No. 1, March 9, 1931.

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NIAGARA FALLS SEEN FROM AN AIRPLANE BEFORE RECENT ROCK SLIDE CHANGED ITS PROFILE

With a roar resembling distant thunder, a huge mass of the edge of American Falls, at left, crashed into the Canyon. This is only a step in the geologic life of the Falls, however, for if the brink continues to dig back at the present rate there will be no Niagara in A. D. 21,924.

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Basques Cling to Languages and Customs

A MYSTERIOUS, self-reliant people, who hold themselves aloof from the national life of Spain, live in the strip of land astride the border between France and Spain in the Pyrenees Mountains.

The Basques claim they are the oldest unmixed race in Europe, yet in some respects they are as modern as to-morrow's newspaper.

An individual language has distinguished them since three centuries before Columbus came to America. Unintelligible to French and Spanish people, when written, it resembles Polish. They persistently refuse to teach their language to strangers. Within the past few years Spanish has penetrated into several hundred Basque towns in the Spanish provinces of Vizcaya, Guipuzcoa, and Alava.

The Basques have vigorously protected their laws, or *fueros,* as they have their language. A Governor's oath taken over a sword, read: "May my head be cut off with this blade if I do not defend the *fueros* of my fatherland." Their *fueros* provided them with one of the purest democracies of all times, a republican constitution, freedom from national militarism, and immunity from taxes. Even when they became subjects of Spain, they insisted upon recognition of their own laws, and sovereigns were required to go through the ceremony of "swearing the *fueros.*" However, following the Carlist War, Queen Isabella made slight amendments which led to other alterations, and through the years the Basques lost more and more of their former political independence.

"Bounding Basque" Typifies Alert Race

The Basques, who are proud of their nickname, "Yankees of Spain," are a dignified, energetic and self-contained race. They have erected iron foundries, they build ships, they mine, they fish and herd sheep.

"The Bounding Basque," a familiar nickname for a famous tennis player, is typical of his alert people.

Fishing villages nestle among green hills. Rough mud streets separate the dwellings. These simple houses have red thatched roofs, shuttered windows and arched doorways and often are painted delicate shades of pink, lemon, blue, and yellow. On Biscay Bay the dwellings lack chimneys because of high winds; outlets for smoke are made below the eaves. As inevitable as the heavy two-wheeled cart and oxen found alongside the house is the umbrella mender. Whether the Basque walks or rides a horse, he carries an umbrella, a protection against frequent rains.

First Floor Is Chicken Roost

As the peasant returns from a day with his flocks, from his fishing smack or from a smelting factory, he must climb a flight of stairs. The entire ground floor of his home is given over to chickens, pigs and steers.

At four years the children drive cows to pasture and their chores increase with their age. At twelve they go into the mountains to watch the sheep, where they often are alone for several days at a time.

Nature Affords Bullring Bleachers

Bull fighting is popular among the Spanish Basques, and a vantage point is ready made from the hill-formed bleachers which surround many natural arenas.

gar, is to furnish auxiliary transportation for the main expedition party after the crossing of the Pamir region. Father De Chardin also expects to make a preliminary survey for further exploration and scientific study when the entire expedition retraces the trail, from Kashgar to Peiping.

Bulletin No. 2, March 9, 1931.

Additional material may be found in "On the World's Highest Plateaus," *National Geographic Magazine*, March, 1931; "The Desert Road to Turkestan," June, 1929; "Marco Polo, the World's Greatest Overland Explorer," November, 1928, and "By Coolie and Caravan across Central Asia," October, 1927. Also "Motor Caravan To Cross Least Known Asia," GEOGRAPHIC NEWS BULLETIN, January 19, 1931.

Form for Renewal of Bulletin Requests

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THIS IS A HOME—NOT A PLAY TENT

These crude portable houses of the Kalmuck tribesmen are perfectly suited to the severe climate of desolate Chinese Turkestan. A skeleton framework of wooden poles is covered with thick felt held down by pegs and heavy stones. The hole in the top lets out the thick blue smoke from the kitchen range—a yak dung fire built on the dirt floor.

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Argentina: World's Leading Cow Country

ON MARCH 14, the Prince of Wales will reach the climax of his South American tour when he opens the British Trade Exhibition at Buenos Aires. This gesture of friendship on the part of the Crown Prince is frankly an effort to stimulate trade between Argentina and the home country. Englishmen are largely dependent on this big business republic for food, especially meats, and they hope in return to find an outlet for their own surplus industrial products.

Spanish in language and outlook, taking Paris for its model in cities, and the United States for its model in business management, Argentina tries to live up to the fact that A comes first in the ABC group of South American leaders, Argentina, Brazil, Chile.

Cow country extraordinary, Argentina has made cattle raising her principal industry by a long-range, triple-trade play; U.S. to B.A. to G.B. Capital and scientific skill in meat packing have been thrown into Buenos Aires by the United States; Buenos Aires completes the play by tossing shiploads of beef and mutton into Great Britain's kitchens. All three participants score: Britishers satisfy their hunger; Argentinians roll up fortunes; Americans cash dividend checks.

Spanish Cattle and Horses Roam Wild

Argentina has more cattle per capita than any other country in the world. Its record of more than three cattle per person is much higher than the United States and even higher than the ratio in our western cattle-raising States. Horses that escaped from the Spaniards multiplied on North American plains; both wild horses and wild cattle multiplied on Argentina's pampas. The Argentina gaucho became a hunter of free-roaming cattle and horses, while his Kansas cowboy cousin became a herder. Cattle stealing was never the serious crime on the pampas that it was in the North American Wild West because in Argentina cattle were free for the taking. No great ranch owner objected if a gaucho killed and ate a cow out of his herd, but it was bad form not to turn in the hide. Only the hides were valuable.

Landlords Hold on to Land

Cattle was king and bids fair to continue a reign in Argentina that never could last in the United States. The natural evolution in the use of good, rich land from cattle to sheep to wheat to corn and pigs and diversified farming has been checked on the pampas temporarily, at least, not by any force of Nature, but by the good old Spanish custom of landlording on a large scale.

Early colonists collected flat pampa land in bulk; blocks hundreds of square miles in area have been held with remarkable tenacity. Division among the children of ranch owners has cut the great holdings down, yet *estancias* as large as the District of Columbia are not uncommon. Unlike the American farmer, the Argentine ranch owner seldom lives on his land. Buenos Aires or Paris for him, while a manager runs the "farm." Pure blood cattle, now popular, demand better food than pampas grass, so he grows alfalfa. But the land will not support successive crops of alfalfa indefinitely, so he rents out—never sells—acreage to an Italian immigrant on fifty-fifty shares, specifying that the Italian must grow wheat. Five years of wheat; the Italian renter is dismissed; back to alfalfa again

Basque pastorals are played outdoors with the stage constructed at the side of a house. The roles are played by men and boys. Playwrights are almost duty-bound to write into each play an infamous character to counterbalance each hero. So that the audience will not be misled, the righteous characters enter from the right of the stage, the unholy from the left.

Market day finds women wearing neat black dresses, white aprons, large flat-brimmed hats of black and white straw, or black handkerchiefs about their hair. They wear rope-soled shoes called *alpargatas*. The men wear long linen blouses, *alpargatas*, and rakish *boinas*, known to Americans as the fashionable beret.

Brass, Copper and Earthenware

The somber apparel of the Basques is put in sharp relief on market day by the huge baskets of oranges and lemons, the trays of dates, figs and raisins. Earthenware utensils are arranged as attractively as they would be in a Fifth Avenue shop, and the array of brass and copper on display suggests New York's Allen Street.

Quaint, old-fashioned shops, cafes, cobblestone streets, mellow old houses, sporty golf courses and fashionable hotels are bundled together in such Basque cities as Vergara and San Sebastian in Guipuzcoa, Bilbao and Durango in Vizcaya, and Vitoria in Alava. Many of the cities are fashionable society resorts, but they still comprise quaint, medieval districts.

Bulletin No. 3, March 9, 1931.

See, also, "The Land of the Basques," *National Geographic Magazine*, January, 1922. For supplementary reading on Spain see "On the Bypaths of Spain," "Seville, More Spanish Than Spain," "Barcelona, Pride of the Catalans," March, 1929. "Jaca: Brown-Walled City of Sham Battles," GEOGRAPHIC NEWS BULLETIN, January 12, 1931.

© N. G. S. *Photograph by Casa Lux*

BILBAO, OFTEN CALLED THE "PITTSBURGH OF SPAIN"

Here, along the fertile banks of the Nervion River, the Basques manufacture steel rails and build steamships. Nearby are famous iron deposits. Ore is shipped from this important Spanish port to England, Holland and Germany.

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Mesohippus, Three-Toed Horse of Wyoming

THOUSANDS of skeletons of Mesohippus, the very great-grandfather of Gallant Fox, marvel of American race tracks, have been discovered in Wyoming.

Mesohippus bore slight resemblance to the winner of the 1930 Kentucky Derby. He was a prehistoric horse about the size of a collie dog and had three toes on each foot. While crossing a swamp Mesohippus probably got bogged in the mire and perished. The deposits that closed over his carcass preserved the fossil bones for about thirty-five million years.

Modern Horse's Link with Past

But the modern horse's link with the past can be observed without visiting a museum.

"There are certain apparently useless structures connected with the legs of a horse," wrote Major General William H. Carter in 'Horses of the World,' prepared for the National Geographic Society, "which give rise to many theories concerning his probable evolution from an animal of different type. There is on the inner surface of each fore leg of the horse, above the knee, and on the inner surface of each hind leg, below the hock joint, a callous, elongated piece of skin known as 'chestnut,' which has long been a subject of investigation, based upon the idea that it represents the former existence of an appendage which has disappeared in the process of evolution.

Asia, Mother of Domesticated Horse

"Practically all writers on the history of the horse who have given serious study to the subject incline to the belief that the wild horse of the steppes of Asia has the most likely claim as the source from which the domesticated horse was derived.

"Scienists all agree that in prehistoric ages certain types of horses ranged over parts of Asia and of North America and South America, and that, while the wild horses of Asia appear to have descended from the original stock, all such animals had disappeared from North and South America before any modern Europeans landed here.

"Research efforts have been highly successful in establishing in the minds of scientists the multiple-toed skeleton remains of an ancient animal as the ancestor of the horse which, during all recorded history, has been distinguished by a single toe encased in a wall of horn or hoof, the form best adapted to carrying heavy weight at speed over rough ground.

"The use of horse chariots prevailed in Egypt as far back as the history of that country has been made known through monuments and ancient inscriptions.

"Among the bas-reliefs and pictures of Assyrian, Persian, Nubian, Greek, Roman, Byzantine, and other horses of the ancients, the types are limited and bear slight resemblance to the modern breeds of horses as developed within the past two centuries.

"The horse, as depicted in the fifth century B. C., in the frieze of the Parthenon and numerous bas-reliefs of that period, bears much resemblance to the wild horse of Asia in size, the shape of the head and neck, and the peculiar short,

and more cattle. High prices for land cannot lure an Argentinian to part with his acres; he has a sure thing and he knows it.

Richest Land Devoted to Livestock

The fertile pampa, as a result, is populated by cattle instead of people. Immigrants pouring into Buenos Aires are forced to try their fortunes in less productive regions where the chances of success are slim, where drought sears the crops, cattle die of fever, and the locusts eat everything in sight. Except for a few colonies established for the land-hungry immigrant, there is no opportunity for him to introduce intensive agriculture in the richest acreage.

It is this set of circumstances which keeps meat products the leader of Argentine's billion dollar export trade. Wheat, virtually a by-product of cattle raising, comes second. Italians have carried their skill in wine making to the semi-arid regions around Mendoza, irrigating their vineyards with ice-fed streams from the Andes. Tucuman forges ahead with Virginia tobacco, while the far north of Argentina strives to cut down the country's dependence on Paraguay for yerba.

Three thousand Americans, approximately, make up the United States colony in Argentina. But Americans are only a drop in Argentina's bulging pocket of outlanders. A fourth of the entire population are foreign born.

Italians vie with Spaniards for numerical superiority; Belgians, Swiss, English, French, Germans, Jews, Russo-Germans, and Russo-Jews season the Argentine scene as the races of Europe blend in the blood of North America. Because the old North American colonial war cry, "All good Indians are dead Indians," echoed also over the pampas, the Argentine Republic is more strongly European than any other state of South America.

Bulletin No. 4, March 9, 1931.

See, also, "Skypaths through Latin America," *National Geographic Magazine*, January, 1931; "Flying the World's Longest Air-Mail Route," March, 1930; "Buenos Aires to Washington by Horse," February, 1929, and "How Latin America Looks from the Air," October, 1927.

©N. G. S. *Photograph by N. O. Winter*

GAUCHOS LASSO AN ANGRY BULL ON THE PAMPAS

Cattle and sheep-raising have made many a fortune in Argentina. Meats are shipped in specially designed refrigerating ships to the principal countries of Europe and North America. Gauchos wear sombreros and leggings and live the same hard adventurous life of the cowboys of Buffalo Bill's days.

© N. G. S. Photograph by W. E. Corbin

HOW THE HORSE HAS GROWN IN THE LAST FORTY-FIVE MILLION YEARS

Amherst College houses one of the most interesting exhibits in the world, showing the development of the horse through the various geologic ages. The tiny Eohippus, only 11 inches high, has four toes on his front feet and three and a fraction on his hind feet. The second horse, Mesohippus, has three toes and is about as large as a Collie dog. Number 3 has toes, but the side ones do not touch the ground; the fourth has lost his side toes and has only a "splint" remaining. The fifth and largest skeleton is that of the horse of to-day.

upstanding mane. The size is readily estimated in comparison with that of the riders, whose legs hang down far below the bodies of the horses.

Cortez Brought Modern Horses

"The first modern horses to land on this continent were brought by Cortez, and participated in the conquest of Mexico. Ferdinand de Soto brought horses to Florida and used them on his long march to the Mississippi. After his death and burial in the Father of Waters, as that river was long known, his followers crossed over. The horses, then taken to the region now known as Texas and abandoned there, together with those coming in from Mexico, were the progenitors of the bands of wild horses that gradually spread over the prairies and become known as Mustangs.

"Had the country over which they roamed remained unoccupied by the American frontiersman and settler, the Mustangs would eventually have vied in numbers with the buffalo, which roamed the prairies from Texas to Canada.

"Very early in the history of New England a considerable trade was built up in the sale of horses in the West Indies. There followed a demand for mules, and many small animals of that breed were shipped from New England. It was not, however, until after the Revolution that the raising of mules assumed large proportions.

"In 1786, the King of Spain presented to General Washington a jack and jennet of the Andalusian breed, and later he received a Maltese jack from the Marquis de Lafayette. The jack, known as Royal Gift, presented by the King of Spain was unusually large, but by crossing the Maltese jack on the Andalusian jennet, Washington became the possessor of a famous sire, which he named Compound."

Bulletin No. 5, March 9, 1931.

See "Horses of the World," published by the National Geographic Society.